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Challenges and Impact of Capital Budgeting Techniques- An Empirical Study (Only Automobiles Companies)

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ABSTRACT

Capital Budgeting decisions are very crucial for every organization. Major decisions like purchase of new plant and machinery, expansion of business etc., these types of decisions require huge amount of capital. If investment made in these assets is wrong then business may have to suffer a lot of loss of money and have to bear the sunk cost as well. So, before taking these decisions, it is mandatory to apply the capital budgeting decisions and there will be chances of wrong decisions. In this research paper , I like to study basically the automobiles company because very few studies are carried on it. ***So, there is a need to study the various issues involve in Capital Budgeting Practices in India.***

1. Meaning of Capital Budgeting

Capital budgeting is the process in which a business determines and evaluates potential large expenses or investments. These expenditures and investments include projects such as building a new plant or investing in a long-term venture. Often, a company assesses a prospective project's lifetime cash inflows and outflows to determine whether the potential returns generated meet a sufficient target benchmark, also known as "investment appraisal."

2. Introduction of automobile companies

The **automotive industry in India** is one of the largest in the world with an annual production of 23.37 million vehicles in FY 2015-16,following a growth of 8.68 per cent over the last year. The automobile industry accounts for 7.1 per cent of the country's gross domestic product (GDP). The Two Wheelers segment, with 81 per cent market share, is the leader of the Indian Automobile market, owing to a growing middle class and a young population. Moreover, the growing interest of companies in exploring the rural markets further aided the growth of the sector. The overall Passenger Vehicle (PV) segment has 13 per cent market share. India is also a prominent auto exporter and has strong export growth expectations for the near future. In FY 2014-15, automobile exports grew by 15 per cent over the last year. In addition, several initiatives by the Government of India and the major automobile players in the Indian market are expected to make India a leader in the Two Wheeler (2W) and Four Wheeler (4W) market in the world by 2020.

3. Role of Automobile Industry in India GDP-Facts

- India has become one of the international players in the automobile market
- The four wheelers include passenger cars, multi-utility vehicles, sports utility vehicles, light, medium and heavy commercial vehicles,etc
- The three wheelers include mopeds, motor-cycles, scooters, and three wheelers
- India ranks 2nd in the global two-wheeler market.
- India is the 4th biggest commercial vehicle market in the world.
- India ranks 11th in the international passenger car market.
- India ranks 5th pertaining to the number of bus and truck sold in the world.
- It is expected that the Automobile Industry in India would be the 7th largest automobile market within the year 2016

(Source:www.business.mapofindia.com/india/gdp/industries/automobile)

4. Review of literature

Jog and Srivastava (1991) surveyed the large Canadian corporations and provide direct empirical evidence on the capital budgeting process. They found many critical issues viz., cash flow forecasting methods, methods used to estimate the cost of capital and the cost of equity and the use of capital budgeting techniques risk analysis techniques. He concluded that most of the firms used multiple capital budgeting methods to evaluate capital investments however DCF methods were employed by more than 80% of our respondents to evaluate projects such as foreign operations and leasing, expansion-new operations and expansion-existing operations.

Block Stanley (2000) has surveyed the capital budgeting policies and procedures of 150 multinational companies in light of current financial theory. He had examined that some of the policies that MNCs used for the capital budgeting decisions are the logical extensions of domestic practices into the international area, while others appear to be misguided changes to normal capital budgeting procedures. According to his study, there are a number of misapplications such as applying corporate wide weighted average cost of capital to foreign affiliate cash flows rather than to cash flows actually remitted to the corporations. Also, risk is frequently measured on a local project basis (in a foreign country) rather than considering the multiple effect on the total corporations. Of the 150 survey respondents in this study, 69.7% believe that international investments increase the risk exposure of the firm and establish policies on that premise. Finally, he has shown that the survey respondents hedge against the uncertainty of the procedures by adding an importance to the weighted average cost of capital as computed by financial analysts given the inconsistent procedures that are often utilized in going from domestic to international capital budgeting.

Ryan Patricia A and Ryan Glenn P. (2002) had evaluated the capital budgeting decision methods used by the 800 manufacturing companies. According to him, most of the most of the companies preferred NPV as capital budgeting tool, which represents alignment between corporate theory and practice. Firms with larger capital investment budgets tend to favor NPV and IRR. PBP is used at least half of the time by 73.7% of the respondents. Fourth in popularity was the discounted payback model used at least half of the time by 58.9% of the companies. Finally at least half time usage was reported for the three models as follows. PI ranks fifth at 43.9%, followed by ARR at 32.3% and finally, IRR at 24.7%. Gupta Sanjeev, Batra Roopali and Sharma Manisha (2007) had made an attempt to find out which capital budgeting techniques is used by manufacturing industries in Punjab, and the influence of factors such as size of capital budget, age and nature of the company, and education, gender and experience of the CEO in capital budgeting decisions. They conducted a primary survey of 40 companies in Punjab. Almost one-third of the companies had capital budget exceeding Rs. 150million. Majority of the sample companies still use non-discounted cash flow techniques like PBP and ARR. Only a few companies use DCF, and among them very less number use NPV technique to evaluate a new project. The most preferred discount rate is WACC. The most popular risk incorporating technique is „Shorter PBP. Many companies feel that CEO education and experience play an important role in selecting the capital budgeting technique. Further, the study did not find any significant relationship betweenthe size of capital budget and capital budgeting methods adopted. Similarly, though at some instances it appears that young companies prefer DCF techniques than the older ones, the same is not true in case of NPV method.

Klammer, Thomas P. (2008) took a sample of 348 firms in France from the 2001 listing of manufacturing firms that appeared in significant industry groups and invest at least $1 million of capital expenditures in each of the five years 2001-2006. He concluded that Present value method was most popular among the various manufacturing companies.

Pettway (2009) surveyed a random sample of 310 business firms. Questionnaire were sent to companies through mail engaged in retailing, manufacturing transportation, land development, entertainment and public utilities to study the capital budgeting process and the methods used to adjust for risk. He concluded that firms considered the Internal Rate of Return technique to be the most important technique for decision making. He also conclude that the most of firms enhanced their profitability requirements to adjust for risk and uncertainty in the given project and determining the future cash flow projections as the most important and most difficult stage of the capital budgeting process.

Lawrence G. and Forrester (2010) analyzed the responses of 125 manufacturing firms that reported as having the greatest stock price growth over the 2004-2009 periods. The survey containing questions related to techniques used in capital budgeting process, the division of responsibility for capital budgeting decisions, the most important and most various difficulties faced in implementation of capital budgeting techniques, the cutoff rate and the various methods used to evaluate the risk factor. They reported that the DCF techniques were the most popular methods for evaluating projects, especially the IRR. However, many firms still used the PBP method as a backup or secondary approach. The most of the companies that responded to the survey indicated that the Research and Development and Finance Department were responsible for evaluating the capital budgeting projects. They conclude that most of the respondent found difficulty in the project definition and cash flow estimation and they considered these as most critical stage of the capital budgeting process. The most of the firms had a cutoff rate between 11% to 16%, and they most often adjusted for risk by increasing the minimum acceptable rate of return on capital projects.

Brighman (2011) conducted the research study of the capital budgeting projects of 15 large manufacturing firms, he found that although techniques that smaller firms prefer PBP method to evaluate the investment proposal but large manufacturing firms most relied on discounted cash flow techniques. Moreover these manufacturing firms assumed some variable constant when discounted cash flow techniques were used. For example, some firms‟ simplifying assumptions include the use of the same economic life and same cash inflows for all projects even though the actual lives and actual cash flows might be different. Further, firms often did not make any adjustment regarding analysis for risk. This survey indicated the result that most of firms preferred discounted techniques.

Adeniyi (2012) asserted that in spite of the theoretical limitations of the payback period method, it is the one that is most widely used in practice. He offered the following reasons for its usage: it is easily understood by all levels of management; it provides an insight on how quickly the initial can be recouped; most managers see risk as time-related i.e. the longer the period, the greater the chance of failure; where a firm faces liquidity constraints and requires a fast repayment of

investments, the pay-back period is more useful; it is appropriate in situations where risky investments are made in uncertain markets that are subject to fast design and product changes or where future cash flows are particularly difficult to predict.

Meigs, et al (2014) a business may benefit from good capital budgeting decisions and suffer from poor ones for many years. Many nonfinancial factors are also considered in making capital budgeting decisions. For example, many companies give high priority to creating new jobs and avoiding layoffs. However, it is also essential that investments in plant assets earn a satisfactory return on the funds available to finance the project and the company will not be able to generate sufficient funds for future investment projects. The capital budgeting techniques are classified into two -non discounted cash flow and discounted cash flow techniques.

Masa, Imegi and Akenbor (2015), investment decisions relate to the corporate decision to invest its resources in the most efficient manner in business activity with the hope that the activity will, in turn, generate a stream of future returns over time. It asks the question; into what uses do we put the available funds of the business such that we become better in the future? It is the responsibility of the financial experts in collaboration with the accountants to analyze and decide on the type of asset to commit a firm"s funds in anticipation of future returns.

5. Research methodology and objectives

Statement of the Problem

Capital budgeting is concerned with allocation of the firm's scarce financial resources among the available favorable circumstances. The return of investment opportunities involves the comparison of the expected future returns from a project with immediate and subsequent return for it. The problems in capital budgeting decisions may be **Future uncertainty, Time Element, Difficulty in Quantification of impact etc.** Since we all know that automobiles companies requires large investment. So In this research, Researcher would like to study the impact of various capital budgeting techniques on the financial variables of the selected companies. There is very less study done in India regarding the same. So, there is a need to study the various issues involve in Capital Budgeting Practices in India.

Objective of the Study

1. To study the challenges and problems in estimation of operating cash flows.
2. To study the impact of particular method on the financial performance (i.e. total revenue, net profits, market capitalization price etc.) in the selected companies.

Research Methodology

The present section elucidates the research methodology of the present study. It presents the research design, target population, collection of data tools and techniques used to study the set objective and interpretation of tools.

Target Population

In this study the researcher take 40 automobile companies which are registered in stock exchange (as per NSE as on 31st March 2016) and financial statements from 2005-06 to 2017-18 of these companies also taken in order to study the concerned objective of the research.

6. Data Processing and Analysis

The data will be processed using the Microsoft Windows Excel. Along with that the mix of appropriate analytical tools and techniques including statistical tables, simple frequency tables, percentages, arithmetic mean, chi square, correlation , regression , t-test , two way ANOVA analysis and Factorial test with one factor and one blocking variable are used to analyze the data and address the research problem.

The questionnaire was comprised of 24 questions which were mainly close ended. All the questions were dichotomous, multiple choice questions based on Likert scale. The primary data were analyzed by applying tabular and chi-square analysis using SPSS rigorously.

Table-1.
Companies prefer capital budgeting techniques

Particular	Frequency	%age
Prefer (Yes)	37	92.5
Not prefer (No)	03	7.5

The results of TableNo-1 Shows that out of 40 companies 37 companies (i.e. 92.5%) prefer to use capital budgeting techniques to evaluate their long term investment decisions.

Table -2
Importance of Quantitative techniques

Evaluation Technique	1	2	3	4	5
Internal Rate of Return (IRR)	9.8%	19.6%	9.75%	25.8%	35.05%
Payback Period (PBP)	5%	0%	10%	30%	55%
Net Present Value (NPV)	4%	5%	8%	29.5%	53.5%
Accounting Rate of Return (ARR)	62.8%	6.3%	12.4%	8%	10.5%
Profitability Index (PI)	54.85%	18.65%	15.75%	6.25%	4.5%
Modified Internal Rate of Return (MIRR)	70.65%	5.65%	12%	2.35%	9.32%

The results are shown in **Table-2** ranked according to perceived importance. The responding firms ranked PBP (55%), NPV (53.5%) and IRR (35.05%) and as the most important techniques respectively. Among these techniques PBP is getting highest rating even though it ignores time value of money and it also ignores cash flow beyond payback period.

It seems as it is easy to calculate and understand, PBP is still a very popular technique. Although it is not directly comparable, these results are consistent with the findings of Wong, Farragher and Leung (1987), who found that payback, IRR and ARR were equally the most popular techniques. However, NPV is ranked second and IRR is ranked third as the most important but 35.05 % consider it as most important technique in this survey. Surprisingly, only 10.5% consider ARR as most important technique, in fact 62.8% respondents are not using this technique at all.

Table -3
Techniques Used for evaluating various investment decisions

S.NO.	**Investment Decision**	IRR	PBP	NPV	ARR	PI	MIRR	Any other
1	New Project	21.5	78.8	40.8	-	4.4%	-	-
2	Expansion of existing operation	28.5	85.4	19.8	3.8	-	4.85%	-
3	Merger / Acquisition	14.45	64.5	50.65	2.4%	3.9%	-	-
4	Replacement of Assets	12.63	49.85	25.85	12.85%	1.6%	-	-
5	Leasing of Assets	18.67	52.67	30.45	1.75%	2.65%	2.75%	-
6	Modernization	20.65	62.85	32.89	4.79%	3.89%	-	-
7	Process or Product improvement	12.63	42.65	29.85	3.96	-	-	-
8	Any other (please specify)	-	-	-	-	-	-	-

As there are multiple responses the total per cent may exceed 100 %.

One can observe that PBP (78.8%), NPV (40.8%) and IRR (21.5%) respectively are the most preferred techniques for evaluating new capital budgeting projects. PBP is most preferred method used in various investment decisions. The respondents prefer even NPV in the second preference in various decisions. However the %age of ARR,PI and MIRR is very low.

Table -4
Ranking of Discount Rate (Cost of Capital)

S.NO	**Particulars**	**%AGE**
1.	Weighted Average Cost Of Capital (WACC)	47.5%
2	Cost of Debt	14.5%
3	Cost of Retained Earning	6.75%
4	Historical rate of return	2.65%
5	Cost of New Equity	7.75%
6	Bank Rate	13.5%
7	Term lending rate	4.85%
8	Arbitrary cut off rate	2.5%

The results summarized in the above **Table-4** indicates that the 47.5% respondents are using WACC as the discount rate which assumes that proposed projects are having same degree of average risk and investment projects are financed out of pool of funds.

Table -5
Ranking the factors that affect Capital Budgeting Techniques

S.NO	**Particulars**	**%AGE**
1.	Finance Theory	12.36%
2	Experience and Competency	42.49%
3	Informal Rule of Thumb	NIL
4	Importance of Project	22.50%
5	Easy Understandability	10.65%
6	Familiarity of Top Management with Method	12%

There are a number of factors deciding capital budgeting methods in a company. As shown in the Table-5 experience and competency (42.49%) is considered as the most important factor influencing the decision of selecting capital budgeting method. The importance of the project is also considered as an important factor (22.5%). The finance theory has also got some weight age in selecting methods which may be due to academic background of the finance decision-makers. One note worthy point here is no firms prefer informal rule of thumb for investment appraisal.

7. Impact of capital budgeting techniques on other factors:

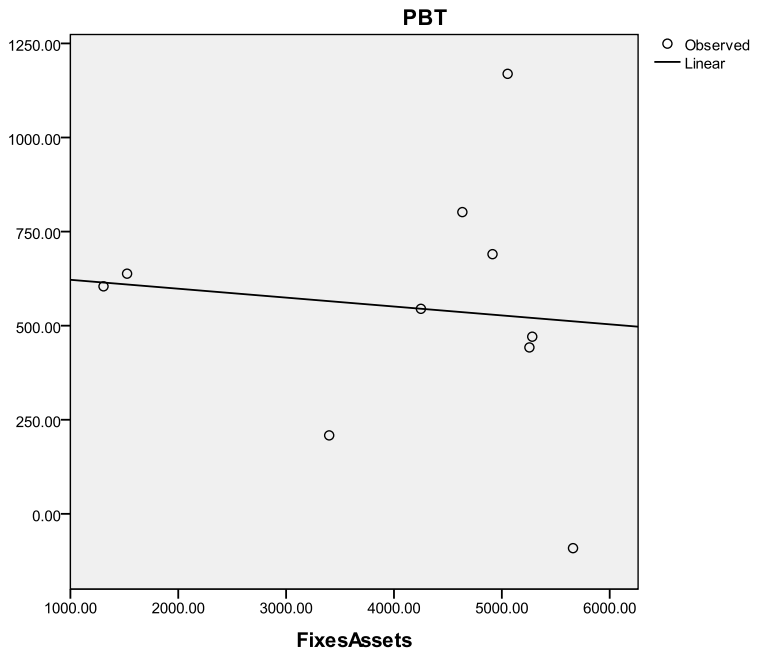
Descriptive Statistics

	Mean	Std. Deviation	N
Fixed Assets	4127.9530	1561.89918	10
Net Sale	10028.2010	4108.42963	10
Total Expenditure	10020.1430	3521.07602	10
PBT	547.8540	337.11857	10
PAT	424.1240	203.49137	10

Correlations

		Fixed Assets	Net Sale	Total Expenditure	PBT	PAT
Fixed Assets	Pearson Correlation	1	.616*	.633*	-.110	-.069
	Sig. (1-tailed)		.029	.025	.381	.425
	Sum of Squares and Cross-products	2.196E7	3.556E7	3.131E7	-519647.412	-198000.792
	Covariance	2439529.040	3951280.990	3479343.285	-57738.601	-22000.088
	N	10	10	10	10	10
Net Sale	Pearson Correlation	.616*	1	.901**	.374	.301
	Sig. (1-tailed)	.029		.000	.143	.199
	Sum of Squares and Cross-products	3.556E7	1.519E8	1.173E8	4664461.083	2267004.789
	Covariance	3951280.990	1.688E7	1.303E7	518273.454	251889.421
	N	10	10	10	10	10
Total Expenditure	Pearson Correlation	.633*	.901**	1	.574*	.549
	Sig. (1-tailed)	.025	.000		.041	.050
	Sum of Squares and Cross-products	3.131E7	1.173E8	1.116E8	6135219.825	3538280.619
	Covariance	3479343.285	1.303E7	1.240E7	681691.092	393142.291
	N	10	10	10	10	10
PBT	Pearson Correlation	-.110	.374	.574*	1	.977**
	Sig. (1-tailed)	.381	.143	.041		.000
	Sum of Squares and Cross-products	-519647.412	4664461.083	6135219.825	1022840.352	603193.095
	Covariance	-57738.601	518273.454	681691.092	113648.928	67021.455
	N	10	10	10	10	10
PAT	Pearson Correlation	-.069	.301	.549	.977**	1
	Sig. (1-tailed)	.425	.199	.050	.000	
	Sum of Squares and Cross-products	-198000.792	2267004.789	3538280.619	603193.095	372678.626
	Covariance	-22000.088	251889.421	393142.291	67021.455	41408.736
	N	10	10	10	10	10

Correlation is significant at the 0.05 level (1-tailed).



ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	12298.978	1	12298.978	.097	.763
Residual	1010541.374	8	126317.672		
Total	1022840.352	9			

The independent variable is Fixed Assets.

Results- A. There is positive moderate correlation in every variable except fixed assets and PBT.

8. Findings and conclusion

1. The hierarchical level of personnel involved in taking capital budgeting decisions, in majority of the companies, is the senior level management. These companies consider it as a higher level decision which is taken primarily at the senior level of management.
2. Moreover, formal capital budgeting analysis is done for investments in projects of smaller capital outlay even for less than Rs. 1 crore. This is because capital budgeting is a crucial decision which affects the value of a firm. A wrong project selection will not only waste the financial resources but will also dampen the value of a firm.
3. Almost four-fifth of the sampled companies reported Expansion of existing business as the investment project in which they invested.
4. The survey revealed that among the traditional methods, Payback period and, in the discounted category IRR and NPV are the most preferred ones by the companies in Indian corporate sector.
5. The survey reveals that the main reasons for non usage of DCF techniques (though by a few companies) are its 'non-suitability of these techniques as per the business condition', 'high level of complexity and difficulty of these techniques' and 'unwillingness of top management to implement' these techniques.
6. Our survey reveals that, in practice WACC is the most preferred discount rate which supports the academic theory also. This is so because it reflects the weighted average cost of all different sources of funds used by a company in one percentage figure.
7. Majority Indian companies use quantitative methods for estimation of cash flows. This is so because the mathematical or quantitative procedures give more accurate estimates than subjective estimates.
8. Further, majority of Indian companies make an adjustment in cash flows for incentive, subsidies and rebates availed from the Government.
9. Project Definition and Cash Flow Estimation was obviously ranked third in risk perception and the Project Review was considered the least risky of all. Thus, in the Indian corporate sector Financial Analysis and Project Selection along with the Project Implementation stage was considered to be still relatively more risky
10. Our survey reveals that majority of Indian companies perceive 'fluctuation in expected return' as a risk followed by 'non-recoverability of investment'. However, Information, Communication and Technology sector is an exception where 'fear of obsolescence' is also perceived as a prime risk.
11. 'Competitor risk', 'Market risk' and 'Project specific risk' are rated as the most important among the different sources of risk in a project by Indian companies.
12. Our survey revealed that the most popular techniques among Indian companies for incorporation of risk are Sensitivity analysis followed by shorter payback period, Scenario analysis and Conservative estimates of cash flows. Risk adjusted discount rates and Judgment evaluation is also used though not much.
13. Our survey reveals that qualitative or nonfinancial criteria play a major and significant role in investment decisions. Indian Companies give due importance not only to financial analysis but also to multiple non financial considerations while selecting an investment proposal. 'SWOT analysis to fit corporate objectives and strategy' and 'Customer market in case of new product/demand analysis' are found to be highly important non financial criteria before selecting an investment.

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